Louisiana's 2012 Integrated Report and 303(d) List

Methods and Rationale

Louisiana Department of Environmental Quality
Office of Environmental Services
Water Permits Division
Water Quality Section

January 17, 2012

Louisiana's 2012 Integrated Report and 303(d) List
Methods and Rationale

TABLES

FIGURES

INTRODUCTION

I. Statutes and Regulations

The Louisiana Department of Environmental Quality (LDEQ) prepared reports to meet the requirements outlined in Sections 303(d) and 305(b) of the federal Water Pollution Control Act (United States Code, Title 33, Section 1251 et seq., 1972) (also known as the Clean Water Act (CWA)) and supporting federal regulations found in Title 40 of the Code of Federal Regulations, Parts 130.7 and 130.10 (40 CFR 130.7, 130.10). Section 303(d) of the CWA and supporting regulations require each state to identify water quality-limited segments (i.e., Louisiana subsegments that do not meet water quality standards) requiring development of total maximum daily loads (TMDLs) and to prioritize the water quality-limited segments for TMDL development. States are required to assemble and evaluate existing and readily available water quality-related data and information to develop the list. Additionally, each state must provide documentation to support listing decisions including: a description of the method used to develop the list; a description of the data and information used to identify (i.e., list) waters; a rationale for any decision not to use existing and readily available data and information; and other information to demonstrate "good cause" for not including waters on the 303(d) list pursuant to 40 CFR 130.7(b)(6).

Section 305(b) of the CWA and supporting regulations require states to report on the quality of state waters every two years; the biennial reports are due April 1 of even-numbered years. Section 305(b) requires a description of all navigable waters in each state and the extent to which these waters provide for the protection and propagation of fish and wildlife and allow for recreational activities in and on the water.

II. Guidance

The United States Environmental Protection Agency (USEPA) issued guidance for the assessment, listing and reporting of states' water quality to meet the requirements of CWA Sections 303(d) (impaired waters list) and 305(b) (water quality inventory) (USEPA various dates). The USEPA guidance outlines the compilation and reporting of state water quality in a combined report – the Integrated Report. USEPA's guidance further outlines the use of categories to classify the quality of watersheds in each state. Integrated Report categories are outlined in Table 1.

Table 1. USEPA Integrated Report categories used by LDEQ to categorize water body/pollutant combinations for the *Louisiana 2012 Integrated Report*.

IR Category (IRC)	IR Category Description
IRC 1	Specific Water body Impairment Combination (WIC) cited on a *previous* §303(d) list is now attaining all uses and standards. Also used for water bodies that are fully supporting all designated uses.
IRC 2	Water body is meeting some uses and standards but there is insufficient data to determine if uses and standards associated with the specific WIC cited are being attained.
IRC 3	There is insufficient data to determine if uses and standards *associated with the specific WIC* cited are being attained.
IRC 4a	WIC exists but a TMDL has been completed for the *specific WIC* cited.
IRC 4b	WIC exists but control measures other than a TMDL are expected to result in attainment of designated uses *associated with the specific WIC* cited.
IRC 4c	WIC exists but a pollutant (anthropogenic source) does not cause the *specific WIC* cited.
IRC 5	WIC exists for one or more uses, and a TMDL is required for the *specific W*IC cited. **IRC 5 and its subcategories represent Louisiana's §303(d) list.**
IRC 5RC (Revise Criteria)	WIC exists for one or more uses, and a TMDL is required for the specific WIC cited; however, LDEQ will investigate revising criteria due to the possibility that natural conditions may be the source of the water quality criteria impairments.

Integrated Report Development

The 2012 Integrated Report contains new assessments for subsegments in all 12 Louisiana basins: Atchafalaya (01), Barataria (02), Calcasieu (03), Pontchartrain (04), Mermentau (05), Vermilion/Teche (06), Mississippi (07), Ouachita (08), Pearl (09), Red (10), Sabine (11), and Terrebonne (12).

I. Water Quality Assessment Methods

The following outlines the description of the methods LDEQ used to develop the CWA Section 303(d) list and water body categorizations found in the 2012 Integrated Report. LDEQ used assessment procedures developed and updated over a number of years. Procedures followed USEPA guidance documents for Section 305(b) reports and Section 303(d) lists and USEPA's Consolidated Assessment and Listing Methodology (CALM) guidance (USEPA various dates). LDEQ based water quality assessments and Section 303(d) listings on specific water body subsegments as defined in Louisiana's Surface Water Quality Standards (Louisiana Administrative Code, Title 33, Part IX, Chapter 11 (LAC 33:IX.1101-1123). Louisiana surface water quality standards define eight designated uses for surface waters: primary contact

recreation (PCR), secondary contact recreation (SCR), fish and wildlife propagation (FWP) (with "subcategory" of limited aquatic and wildlife use (LAW)), drinking water supply (DWS), oyster propagation (OYS), agriculture (AGR), and outstanding natural resource waters (ONR). Designated uses have a specific suite of ambient water quality parameters used to assess their support. Links between designated uses and water quality parameters, as well as water quality assessment procedures, can be found in Table 2. Additional details of Louisiana's Integrated Report assessment process can be found in Louisiana's Standard Operating Procedures for Production of Water Quality Integrated Report (LDEQ 2011a).

Table 2. Decision process for evaluating use support, showing measured parameters for each designated use; Louisiana's *2012 Integrated Report.*[1]

Designated Use	**Measured Parameter**	**Support Classification for Measured Parameter**		
		Fully Supporting	**Partially Supporting[2]**	**Not Supporting**
Primary Contact Recreation (PCR) (Designated swimming months of May-October, only)	Fecal coliform[3]	0-25% do not meet criteria	-	>25% do not meet criteria
	Temperature	0-30% do not meet criteria	>30-75% do not meet criteria	>75% do not meet criteria
	Metals[4,5] and Toxics	<2 exceedances of chronic or acute criteria in most recent consecutive 3-year period, or 1-year period for newly tested waters	-	≥2 exceedances of chronic or acute criteria in most recent consecutive 3-year period, or 1-year period for newly tested waters
Secondary Contact Recreation (SCR) (All months)	Fecal coliform[3]	0-25% do not meet criteria	-	>25 % do not meet criteria
	Metals[4,5] and Toxics	<2 exceedances of chronic or acute criteria in most recent consecutive 3-year period, or 1-year period for newly tested waters	-	≥2 exceedances of chronic or acute criteria in most recent consecutive 3-year period, or 1-year period for newly tested waters

Table 2. Decision process for evaluating use support, showing measured parameters for each designated use; Louisiana's *2012 Integrated Report.*[1]

Designated Use	Measured Parameter	Support Classification for Measured Parameter		
		Fully Supporting	**Partially Supporting**[2]	**Not Supporting**
Fish and Wildlife Propagation (FWP)	Dissolved oxygen (routine ambient monitoring data)[6]	0-10% do not meet criteria	>10-25% do not meet criteria	>25% do not meet criteria
	Dissolved oxygen (follow-up continuous monitoring data)[6]	0-10% do not meet criteria	>10-25% do not meet criteria	>25% do not meet criteria
	Temperature, pH, chloride, sulfate, TDS, turbidity	0-30% do not meet criteria	>30-75% do not meet criteria	>75% do not meet criteria
	Metals[4,5] and Toxics	<2 exceedances of chronic or acute criteria in most recent consecutive 3-year period,[4,5] or 1-year period for newly tested waters	-	≥2 exceedances of chronic or acute criteria in most recent consecutive 3-year period,[4,5] or 1-year period for newly tested waters

Table 2. Decision process for evaluating use support, showing measured parameters for each designated use; Louisiana's *2012 Integrated Report.*[1]

Designated Use	Measured Parameter	Support Classification for Measured Parameter		
		Fully Supporting	**Partially Supporting**[2]	**Not Supporting**
Drinking Water Source (DWS)	Color	0-30% do not meet criteria	>30-75% do not meet criteria	>75% do not meet criteria
	Fecal coliform[3]	0-30% do not meet criteria	-	>30 % do not meet criteria
	Metals[4,5] and Toxics	< 2 exceedances of drinking water criteria in most recent consecutive 3-year period,[4,5] or 1-year period for newly tested waters	-	≥2 exceedances of drinking water criteria in the most recent consecutive 3-year period,[4,5] or 1-year period for newly tested waters
Outstanding Natural Resource (ONR)	Turbidity	0-10% do not meet criteria	>10-25% do not meet criteria	>25% do not meet criteria
Agriculture (AGR)	None	-	-	-
Oyster Propagation (OYS)	Fecal coliform[3]	Median fecal coliform ≤ 14 MPN/100 mL; and ≤ 10% of samples > 43 MPN/100 mL	-	Median fecal coliform > 14 MPN/100 mL; and > 10% of samples > 43 MPN/100 mL
Limited Aquatic and Wildlife (LAW)	Dissolved oxygen[6]	0-10% do not meet criteria	>10-25% do not meet criteria	>25% do not meet criteria

Table 2. Decision process for evaluating use support, showing measured parameters for each designated use; Louisiana's *2012 Integrated Report.*[1]

Designated Use	Measured Parameter	Support Classification for Measured Parameter		
		Fully Supporting	Partially Supporting[2]	Not Supporting

Footnotes

1. Where deviations from the decision process described in Table 2 occur, detailed information will be given to account for and justify those deviations. For instance, circumstances that may not be accounted for in the plain electronic analysis of the data will be explored and may be used to either not list the water body or to put the Water body Impairment Combination (WIC) into a different category. Those circumstances will be fully articulated.
2. While the assessment category of "Partially Supporting" is included in the statistical programming, any use support failures were recorded in the Assessment Database (ADB) as "Not Supporting." This procedure was first adopted for the 2002 §305(b) cycle because "partially supported" uses receive the same TMDL treatment as "not supported" uses.
3. For most water bodies, criteria are as follows: PCR, 400 colonies/100 mL; SCR, 2,000 colonies/100 mL; DWS, 2,000 colonies/100 mL; SFP, 43 colonies/100 mL (see LAC 33:IX.1123).
4. Determination of the application of marine or freshwater metals criteria was made based on LAC 33:IX.1113.C.6.d.
5. Parameters collected quarterly (metals and organics) required a minimum of three samples. For metals assessments through 2008, only a *preliminary* determination of impairment based on routine ambient sampling was made. If preliminary results indicated possible impairment, this was then followed up with an additional round of five "ultra-clean" metals samples using special sample collection and laboratory analysis methods to determine *final* impairment for IR purposes. These special methods are designed to significantly reduce the possibility of sample contamination during collection and laboratory analysis. As with ambient sampling, if two or more of the ultra-clean samples exceeded criteria, then the subsegment was considered a *final* impairment for Integrated Report purposes. With current budget constraints, metals ultra-clean sampling is no longer done.
6. In the event that analysis of routine ambient monitoring data for dissolved oxygen results in partial- or non-support, continuous monitoring (CM) data, where available, was used for follow-up assessment. CM data runs were approximately 48-72 hours in duration. CM data was evaluated as follows: All of the 15-minute interval dissolved oxygen observations from a CM sample run were analyzed to determine if more than 10% of the data points were below minimum criteria. Water bodies that fell below the criteria greater than 10% of the time were reported as IRC 5 and, therefore, are on the §303(d) list. Water bodies that fell below the criteria less than or equal to 10% of the time were placed in IRC 1, fully supported. If ambient monitoring indicated impairment and CM data was not available for analysis, the water body was placed in IRC 5 until such time as CM data can be collected during the critical season of May 1 through October 31.

II. Water Quality Data and Information

LDEQ prepared assessments using existing and readily available water quality data and information in order to comply with rules and regulations under §303(d) of the CWA (33 U.S.C. §1313 and 40 CFR 130.7). LDEQ used monitoring procedures and data for the 2012 Integrated Report that remained essentially the same as those used to collect data for the 2010 Integrated Report. However, some extraordinary events and/or non-routine activities resulted in modifications to routine monitoring procedures. LDEQ discontinued collection of ambient monitoring following landfall of Hurricane Gustav in September 2008 and after the oil spill in April 2010 due to shifts in resources and/or event-driven impacts to waters. LDEQ resumed monitoring based on availability of resources and/or a determination that water bodies had returned to pre-hurricane condition. Therefore, no data potentially impacted by the hurricane and oil spill events were used for the 2012 assessments.

LDEQ primarily relied on data and information supplied through the LDEQ routine ambient monitoring program to conduct water quality assessments for the 2012 Integrated Report. LDEQ conducted monitoring on nearly all water quality subsegments on a four-year statewide monitoring cycle. Approximately one-quarter of the state's subsegments were monitored each year; a limited number of subsegments were monitored (and continue to be monitored) every year (i.e., long-term monitoring stations). Each monitoring cycle or "water-year" begins in October and ends in September of each year; concluding the monitoring cycle in September allowing time to process data and generate the Integrated Report by April 1st of even-numbered years. LDEQ collected monthly and quarterly (metals and organics) water quality data (LDEQ 2004; LDEQ 2007; LDEQ 2008a; LDEQ 2008b; LDEQ 2010a; LDEQ 2010b; and LDEQ 2011b); ambient water quality data are available on LDEQ's web site at: http://www.deq.louisiana.gov/portal/Default.aspx?tabid=2421.

LDEQ compiled and assessed data from the ambient water quality monitoring network collected between October 1, 2007 and September 30, 2011; up to four years (48 samples) of data were available for subsegments with long-term monitoring sites.

II.a. Subsegments with Downstream Monitoring Sites

LDEQ used ambient monitoring data and information collected from within or immediately downstream of a water body subsegment to evaluate each of the subsegment's designated uses, using the decision processes shown in Table 2 ("immediately downstream" typically means within approximately 600 yards or less of the subsegment boundary). Seven subsegments used for the 2012 IR had sites "immediately downstream" of the subsegment boundary; in each case there were no known inputs between the subsegment boundary and the sample site. Four subsegments had sample points between one and five miles downstream from the subsegment boundary. In each case there were no reasonable alternatives to sampling at or above the

subsegment boundary and each site was determined to be representative of the assessed subsegment.

II.b. Subsegments with Long-Term Monitoring Sites

LDEQ collected data at 21 sites in subsegments with long-term monitoring stations. Typically, LDEQ applied assessments for a monitoring station indicating use impairment to the entire subsegment, even if the second monitoring station did not indicate use impairment.

II.c. Metals

LDEQ collected two sets of metals data through 2008. Routine ambient monitoring data were collected using a modified-clean sampling technique. If routine ambient monitoring data indicated potential impairment of the use, LDEQ collected an additional five sets of data using ultra-clean sampling metals data to make a final determination on use support; ultra-clean sampling significantly reduces the potential for sample contamination. Ultra-clean metals sampling was discontinued in 2008 due to limited resources.

II.d. Dissolved Oxygen

Beginning in 2008, LDEQ often collected two sets of data to conduct assessments. If routine ambient monitoring data indicated potential impairment of the use, LDEQ collected and used continuous monitoring data sets to make a final determination on use support; continuous monitoring data allows evaluation of the 24-hour diurnal dissolved oxygen fluctuations and an improved determination of whether the frequency of dissolved oxygen exceedances are impairing the use (LDEQ 2008b). Deployment of continuous monitors was also dependent on available resources and a determination of whether the extra data set was appropriate for collection (e.g., was it already known that the stream was impaired, and therefore not beneficial to deploy a continuous monitor until additional pollution control measures have been implemented).

II.e. Coastal Subsegments with Shared Monitoring Sites

Prior to the 2010/2011 monitoring cycle, LDEQ evaluated coastal subsegments for the potential to have shared data points for multiple contiguous and similar subsegments. Subsidence and other land-altering activities have significantly impacted Louisiana coastal marshes creating open water areas where subsegments had previously been separated by intact marsh or land. LDEQ collected data in contiguous similar subsegments on an alternating basis (e.g., one subsegment was monitored one month while a similar contiguous subsegment was monitored the next month, etc.). Each

monitoring site was sampled approximately six times over the course of the water monitoring year. LDEQ monitored 21 subsegments using this alternating site approach; the individual and combined assessments are shown in Table 3.

LDEQ assessed the two or three neighboring subsegments separately. The resulting individual subsegment/site assessments were then compared to determine if each tested parameter was the same. If both assessments were the same for each parameter, then the same assessment results were applied to both subsegments. If the assessments for any specific parameter differed between the two subsegments/sites then the data, if sufficient, were re-evaluated to determine independent assessments for each subsegment and parameter. If there was insufficient data for independent assessments then the separate data sets for each parameter were combined for a single assessment applying to both subsegments (Table 3).

II.f. External Data and Information

LDEQ's routine ambient monitoring data (described above) provided the primary set of data and information used for water quality assessments and listing decisions. However, LDEQ also used external data sets and information. LDEQ used *Enterococcus* and fecal coliform bacteria data sets collected by the Louisiana Department of Health and Hospitals (LDHH) for the state's Beach Monitoring Program, and LDHH fish and swimming advisory information. For water bodies within a subsegment with fish consumption or swimming advisories, the advisory water body was also named in the 2012 IR. Impairments of this nature are water body-specific issues not directly related to the overall subsegment.

LDEQ also evaluated dissolved oxygen data sets collected by the Louisiana Universities Marine Consortium (LUMCOM) to monitor the Gulf of Mexico hypoxic zone. Finally, LDEQ solicited data and information from the public. LDEQ published a request for data and information during a 30-day public notice period which ended October 12, 2011. As a result of the public request for data, additional water quality data was provided by Lake Pontchartrain Basin Foundation. All data considered for assessment purposes were required to meet quality assurance/quality control (QA/QC) procedures comparable to LDEQ's Ambient Monitoring Quality Assurance Project Plan (LDEQ 2011b). External data sets are available upon request.

Table 3. Coastal subsegments with shared ambient water quality monitoring sites.

PCR = Primary Contact Recreation; SCR = Secondary Contact Recreation; FWP = Fish and Wildlife Propagation; OYS = Oyster Propagation; INSD = Insufficient Data; ND = not significantly different; SD = significantly different ($\alpha = 0.05$); Satterthwaite approximation utilized when equal variance assumption violated.

Subsegments/ Sites	**Separate Assessment**	**Statistical Comparison of Sites by Parameter** (based on a t-test unless stated otherwise)					
		Dissolved Oxygen (DO)	**Fecal Coliform**	**pH**	**Turbidity**	**Temperature**	**Combined Assessment**
041701/0035	PCR - INSD but 0 exceedances for fecal and temperature criteria; Full Support All Other Parameters and Uses	ND ($p = 0.6072$)	ND ($p = 0.6019$)	ND ($p = 0.4723$)	ND ($p = 0.8247$)	ND ($p = 0.9785$)	Combined data sets for sites 0035 and 1072 indicate full support of all parameters and uses.
041704/1072	PCR - INSD but 0 exceedances for fecal and temperature criteria; Full Support All Other Parameters and Uses						
042102/1080	PCR - INSD but 0 exceedances for fecal and temperature criteria; Impaired for OYS with 42.9% of fecals exceeding criterion; Full Support All other Parameters	ND ($p = 0.7901$)	ND ($p = 0.4103$)	ND ($p = 0.4831$)	ND ($p = 0.606$)	ND ($p = 0.911$)	Combined data sets for sites 1080 and 0007 indicate impairment of OYS use with 42.8% of combined fecal data exceeding criterion; full support of all other parameters and uses.
042104/0007	PCR - INSD but 0 exceedances for fecal and temperature criteria; Impaired for OYS with 42.9% of fecals exceeding criterion; Full Support All other Parameters						

Table 3. Coastal subsegments with shared ambient water quality monitoring sites.

PCR = Primary Contact Recreation; SCR = Secondary Contact Recreation; FWP = Fish and Wildlife Propagation; OYS = Oyster Propagation; INSD = Insufficient Data; ND = not significantly different; SD = significantly different ($\alpha = 0.05$); Satterthwaite approximation utilized when equal variance assumption violated.

Subsegments/ Sites	**Separate Assessment**	**Statistical Comparison of Sites by Parameter** (based on a t-test unless stated otherwise)					
		Dissolved Oxygen (DO)	**Fecal Coliform**	**pH**	**Turbidity**	**Temperature**	**Combined Assessment**
042201/1090	PCR - INSD but 0 exceedances for fecal and temperature criteria; Full Support All Other Parameters and Uses	ND ($p = 0.7158$)	ND ($p = 0.191$)	ND ($p = 0.3908$)	ND ($p = 0.4831$)	ND ($p = 0.7455$)	Combined data sets for sites 1090 and 1082 indicate full support of all parameters and uses.
042202/1082	PCR - INSD but 0 exceedances for fecal and temperature criteria; Full Support All Other Parameters and Uses						
042203/1089	PCR - INSD but 0 exceedances for fecal and temperature criteria; Full Support All Other Parameters and Uses	ND ($p = 0.2931$)	ND ($p = 0.3632$)	ND ($p = 0.8975$)	ND ($p = 0.7477$)	ND ($p = 0.7355$)	Combined data sets for sites 1089 and 1091 indicate full support of all parameters and uses.
042204/1091	PCR INSD but 0 exceedances for fecal and temperature criteria; Full Support All Other Parameters and Uses						

Table 3. Coastal subsegments with shared ambient water quality monitoring sites.

PCR = Primary Contact Recreation; SCR = Secondary Contact Recreation; FWP = Fish and Wildlife Propagation; OYS = Oyster Propagation; INSD = Insufficient Data; ND = not significantly different; SD = significantly different ($\alpha = 0.05$); Satterthwaite approximation utilized when equal variance assumption violated.

Subsegments/ Sites	**Separate Assessment**	**Statistical Comparison of Sites by Parameter** (based on a t-test unless stated otherwise)					
		Dissolved Oxygen (DO)	**Fecal Coliform**	**pH**	**Turbidity**	**Temperature**	**Combined Assessment**
042205/1088	PCR INSD but 0 exceedances for fecal and temperature criteria; Full Support All Other Parameters and Uses	ND ($p = 0.9102$)	ND ($p = 0.191$)	ND ($p = 0.6869$)	ND ($p = 0.1513$)	ND ($p = 0.7587$)	Combined data sets for sites 1088 and 1087 indicate full support of all parameters and uses.
042206/1087	PCR INSD but 0 exceedances for fecal and temperature criteria; Full Support All Other Parameters and Uses						
042207/1083	PCR INSD but 0 exceedances for fecal and temperature criteria; Full Support All Other Parameters and Uses	ND ($p = 0.6607$)	ND ($p = 0.3632$)	ND ($p = 0.5571$)	ND ($p = 0.9535$)	ND ($p = 0.7432$)	Combined data sets for sites 1083 and 0006 indicate full support of all parameters and uses.
042208/0006	PCR INSD but 0 exceedances for fecal and temperature criteria; Full Support All Other Parameters and Uses						

Table 3. Coastal subsegments with shared ambient water quality monitoring sites.

PCR = Primary Contact Recreation; SCR = Secondary Contact Recreation; FWP = Fish and Wildlife Propagation; OYS = Oyster Propagation; INSD = Insufficient Data; ND = not significantly different; SD = significantly different ($\alpha = 0.05$); Satterthwaite approximation utilized when equal variance assumption violated.

Subsegments/ Sites	**Separate Assessment**	**Statistical Comparison of Sites by Parameter** (based on a t-test unless stated otherwise)					
		Dissolved Oxygen (DO)	**Fecal Coliform**	**pH**	**Turbidity**	**Temperature**	**Combined Assessment**
060803/0678	PCR INSD but 50% of fecals exceeding criterion; SCR impaired with 42.9% of fecals exceeding criterion; FWP impaired with 57.1% of turbidity samples exceeding criterion; Full Support All Other Parameters and Uses	ND ($p = 0.291$)	ND ($p = 0.3658$)	ND ($p = 0.5945$)	ND ($p = 0.2533$)	ND ($p = 0.4488$)	Combined data sets for sites 0678 and 0679 indicate impairment of PCR and SCR uses with 62.5% and 64.3%, respectively, of combined fecal data exceeding criteria; combined data sets for turbidity indicate FWP impairment with 35.7% exceeding criterion; Full Support of All Other Parameters and Uses.
060804/0679	PCR INSD but 75% of fecals exceeding criterion; SCR impaired with 85.7% of fecals exceeding criterion; FWP - fully supported but 14.3% of turbidity samples exceeding criterion; Full Support All Other Parameters and Uses						

Table 3. Coastal subsegments with shared ambient water quality monitoring sites.

PCR = Primary Contact Recreation; SCR = Secondary Contact Recreation; FWP = Fish and Wildlife Propagation; OYS = Oyster Propagation; INSD = Insufficient Data; ND = not significantly different; SD = significantly different ($\alpha = 0.05$); Satterthwaite approximation utilized when equal variance assumption violated.

Subsegments/ Sites	**Separate Assessment**	**Statistical Comparison of Sites by Parameter** (based on a t-test unless stated otherwise)					
		Dissolved Oxygen (DO)	**Fecal Coliform**	**pH**	**Turbidity**	**Temperature**	**Combined Assessment**
061001/0691	PCR INSD but 100% of fecals exceeding criterion; SCR impaired with 33.3% of fecals exceeding criterion; OYS impaired with 83.3% of fecals exceeding criterion; Full Support All Other Parameters and Uses	ND ($p = 0.9597$)	ND ($p = 0.8569$)	**SD ($p = 0.0497$)**	ND ($p = 0.5996$)	ND ($p = 0.7195$)	Combined data sets for sites 0691 and 0316 indicate impairment of PCR with 50% of combined fecal data exceeding criterion; OYS impaired with 54.2% of combined fecal data set indicating impairment; Full Support All Other Parameters and Uses (pH data sets were significantly different; however, both sets indicated full support for the respective sites)
061104/0316	PCR impaired with 33.3% of fecals exceeding criterion; OYS impaired with 44.4% of fecals exceeding criterion; Full Support All Other Parameters and Uses						

Table 3. Coastal subsegments with shared ambient water quality monitoring sites.

PCR = Primary Contact Recreation; SCR = Secondary Contact Recreation; FWP = Fish and Wildlife Propagation; OYS = Oyster Propagation; INSD = Insufficient Data; ND = not significantly different; SD = significantly different ($\alpha = 0.05$); Satterthwaite approximation utilized when equal variance assumption violated.

Subsegments/ Sites	**Separate Assessment**	**Statistical Comparison of Sites by Parameter** (based on a t-test unless stated otherwise)					
		Dissolved Oxygen (DO)	**Fecal Coliform**	**pH**	**Turbidity**	**Temperature**	**Combined Assessment**
120406/0937	PCR INSD but 33.3% of fecals exceeding criterion; OYS impaired with 50% of fecals exceeding criterion; Full Support All Other Parameters and Uses	ND	ND	ND	ND	ND	Combined data sets for sites 0937 and 0955 indicate impairment of PCR with 33.3% of combined fecal data exceeding criterion; OYS impaired with 58.3% of combined fecal data set indicating impairment; Full Support All Other Parameters and Uses
120708/0955	PCR INSD but 33.3% of fecals exceeding criterion; OYS impaired with 66.7% of fecals exceeding criterion; Full Support All Other Parameters and Uses	(p = 0.7552)	(p = 0.4647)	(p = 0.4523)	(p = 0.0554)	(p = 0.9132)	

Table 3. Coastal subsegments with shared ambient water quality monitoring sites.

PCR = Primary Contact Recreation; SCR = Secondary Contact Recreation; FWP = Fish and Wildlife Propagation; OYS = Oyster Propagation; INSD = Insufficient Data; ND = not significantly different; SD = significantly different ($\alpha = 0.05$); Satterthwaite approximation utilized when equal variance assumption violated.

Subsegments/ Sites	**Separate Assessment**	**Statistical Comparison of Sites by Parameter** (based on a t-test unless stated otherwise)					
		Dissolved Oxygen (DO)	**Fecal Coliform**	**pH**	**Turbidity**	**Temperature**	**Combined Assessment**
120802/0958	PCR - INSD but 0 exceedances for fecal and temperature criteria; Full Support All Other Parameters and Uses	ND ($p = 0.8436$; ANOVA)	ND ($p = 0.2092$; ANOVA)	**SD ($p = 0.031$; ANOVA) 0959 ≠ 0958 ($p = 0.0304$*)**	ND ($p = 0.4755$; ANOVA)	ND ($p = 0.9901$; ANOVA)	Combined data sets for sites 0958, 0959 and 0960 indicate Full Support of All Parameters and Uses. (pH data sets were significantly different; however, all three data sets indicated full support for pH for the respective sites)
120803/0959	PCR - INSD but 0 exceedances for fecal and temperature criteria; Full Support All Other Parameters and Uses						
120804/0960	PCR - INSD but 0 exceedances for fecal and temperature criteria; Full Support All Other Parameters and Uses						

III. Rationale for Not Using Readily Available Data and Information

In accordance with LDEQ's *Quality Assurance Project Plan(s) for the Ambient Water Quality Monitoring Network* (LDEQ 2007; LDEQ 2010b; and LDEQ 2011b) approved by USEPA Region 6, LDEQ required at least five data points for parameters collected monthly and a minimum of three data points for parameters collected quarterly; otherwise, insufficient data were available for assessment purposes. LDEQ conducted additional evaluations of data sets to determine usability in accordance with standard operating procedures (LDEQ 2011c) and data quality objectives outlined in the Quality Assurance Project Plans outlined above. Data quality issues that may have resulted in qualifying data sets resulting in limited and/or no usability include, but are not limited to: limited geospatial data and/or representativeness; limited temporal data and/or representativeness; limited quality control data; and quality control data indicating data are of limited use (e.g., blank contamination).

IV. Good Cause for Not Listing Waters

In accordance with CWA Section 303(d) and federal regulations, LDEQ listed waters as impaired and requiring TMDL development (category 5, see Table 1) if sufficient data of appropriate quality were available. USEPA has listed three coastal Louisiana subsegments on the 2008 and 2010 303(d) list of impaired waters. LDEQ determined that the core data set used by USEPA for listing the coastal subsegments in 2008 and 2010 is insufficient. Additional reasons LDEQ did not list the coastal subsegments included: EPA and LDEQ agree that stratified dissolved oxygen criteria should be investigated for Louisiana coastal waters; the area of the subsegments encroached upon by the Gulf of Mexico hypoxic zone is minimal; National Oceanic and Atmospheric Administration (NOAA) reports indicate excellent coastal fisheries in Louisiana; U.S. Geological Survey (USGS) studies indicate the three Louisiana coastal subsegments have negligible impact on the Gulf of Mexico hypoxic zone; TMDL development for those subsegments will not resolve the Gulf hypoxia issue; and addressing Gulf hypoxia will, at a minimum, require a multi-state and regional effort. This position is further defined below.

IV.a. Insufficient Data to List Coastal Waters

LDEQ evaluated the data sets used by EPA and determined the data sets are limited both temporally and geographically. LDEQ's data quality objectives contained in the ambient monitoring Quality Assurance Project Plan approved by USEPA outline a minimum of five data points throughout a calendar year for water quality assessment purposes. The data sets used by USEPA only accounted for one day per year at seven of the eight sites located within Louisiana territorial waters. As a result, these seven sites only had one set of water column dissolved oxygen data rather than the required minimum of five data sets throughout the calendar year. Additionally, these seven sites were only sampled during the critical summer period. Only one of the eight sites within Louisiana's three-mile limit was sampled more than once during the same year. For 2007 this site was sampled ten times throughout the year but not consistently every month. During 2007 the lowest dissolved oxygen reading at any depth for this site was 5.34 mg/L, occurring in June. According to LDEQ's assessment protocols, the site was fully supporting the dissolved oxygen criteria for 2007, the only sampling year within the normal four-year period of

record for the 2012 Integrated Report. All other months sampled at the site also had dissolved oxygen values above 5.0 mg/L at all tested depths.

IV.b. Stratified Dissolved Oxygen Criteria for Coastal Waters

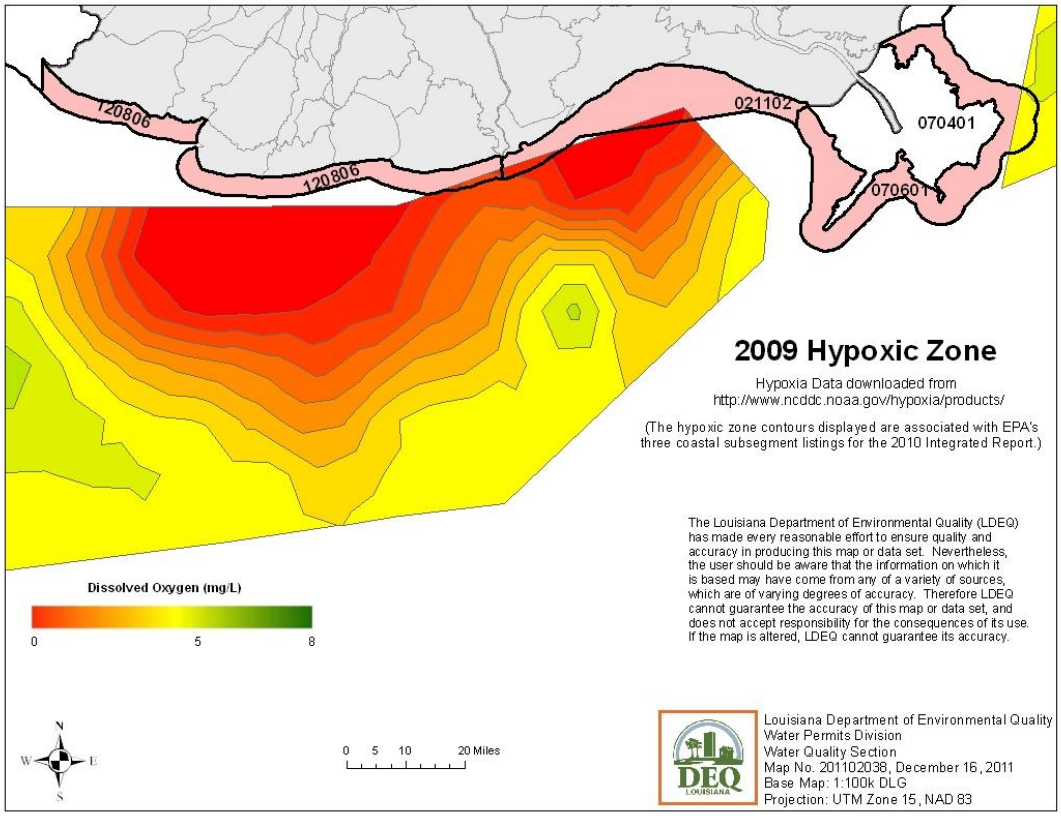
USEPA and LDEQ agree that depth-stratified dissolved oxygen criteria should be investigated for application in Louisiana coastal waters. The lack of appropriate and promulgated dissolved oxygen criteria specific to the deeper waters of coastal Louisiana subsegments resulted in inaccurate assessments. It is well documented that deep water coastal areas experience low dissolved oxygen due to stratification effects without causing impairment to aquatic life uses. For example, the Chesapeake Bay dissolved oxygen criteria guidance allows dissolved oxygen concentrations of 1.0 mg/L for deep-channel seasonal refuge use from June 1 – September 30 (USEPA 2003). The low dissolved oxygen values are specific for protection of benthic infaunal and epifaunal worms and clams living in the deep unconsolidated sediments of the bay, conditions similar to those found at the bottom of the deeper waters of coastal Louisiana. In addition to deep-channel habitats, the Chesapeake Bay guidance outlines deep-water seasonal fish and shellfish use criteria of a 30-day mean of greater than 3 mg/L, a 1-day mean of greater than 2.3 mg/L, and an instantaneous minimum of greater than 1.7 mg/L for June 1 – September 30 to protect aquatic life uses (USEPA 2003).

The detailed and low dissolved oxygen criteria recommendations outlined in the guidance for the Chesapeake Bay point to the need for the same level of effort to evaluate appropriate and protective dissolved oxygen criteria in Louisiana's Gulf Coast waters. Until further investigation into the applicability of stratified dissolved oxygen criteria for Louisiana coastal waters can be accomplished, insufficient data and information remain a concern in conducting accurate water quality assessments.

IV.c. Limited Areal Extent of Hypoxic Zone in Coastal Subsegments

As illustrated in NOAA's 2009 hypoxic zone map (Figure 1) the area of the subsegments encroached upon by the Gulf of Mexico hypoxic zone is minimal. Subsegment 021102 shows approximately 9.4% of the subsegment area is possibly impacted by the hypoxic zone. For subsegments 070601 and 120806, 8.6 % and 2.6%, respectively, of the subsegment areas are possibly impacted. By contrast, the map illustrates the vast majority of the hypoxic zone lies outside of Louisiana territorial waters and thus would be unaffected by any TMDL implementation measures occurring within the subsegments in question.

Figure 1. Gulf of Mexico hypoxic zone off the Louisiana coast for 2009.



IV.d. Coastal Fisheries

NOAA reports routinely indicate excellent coastal fisheries in Louisiana. The Louisiana coast remains one of the most productive fisheries in the Gulf and the United States as a whole (NOAA 2011). Based on commercial landings for 2009 Louisiana's reported catch (528,071 metric tons) was over five times that of the nearest Gulf Coast state, Mississippi, which reported 104,456 metric tons. Texas reported 45,132 metric tons while Florida reported 27,904 metric tons. For 2010, Louisiana reported 455,762 metric tons; Mississippi 50,459 metric tons; Texas 40,779 metric tons; and Florida 28,360 metric tons (NOAA 2011). Across the United States, Louisiana was second only to Alaska in total metric tons of commercial fisheries, with Alaska bringing in 1,971,990 metric tons to Louisiana's 455,762 metric tons in 2010. The third highest state was Virginia with 224,565 metric tons, less than half of Louisiana's total for the same year (NOAA 2011).

In terms of port landings (million pounds), Louisiana had two of the top five and three of the top ten port landings for 2009 and 2010. For the same period, Louisiana had six of the top 50 ports, second only to Alaska with eleven. Four of the six ports are based near fisheries for the three coastal subsegments placed on the 303(d) by EPA. Alaska had three of the top ten ports followed by California (two), Virginia (one), and Massachusetts (one). Notably, Louisiana's leading port for commercial landings, Empire-Venice, is

located at the mouth of the Mississippi River (NOAA 2011). In 2009 and 2010 Louisiana was second only to Florida in terms of pounds and number of fish harvested for marine recreational fisheries (NOAA 2010). Many marine recreational fishing trips are based in the coastal waters of the Barataria, Terrebonne, and Mississippi River coastal waters.

The coastal waters considered in the NOAA report include the three subsegments in question, 021102, 070601, and 120806, where much of Louisiana's commercial and recreational fishing occurs. Based on the preceding NOAA reports of commercial and recreational fisheries, the fish and wildlife propagation use in Louisiana's coastal waters is fully supported and not impaired by the Gulf hypoxic zone.

IV.e. Modeling Studies

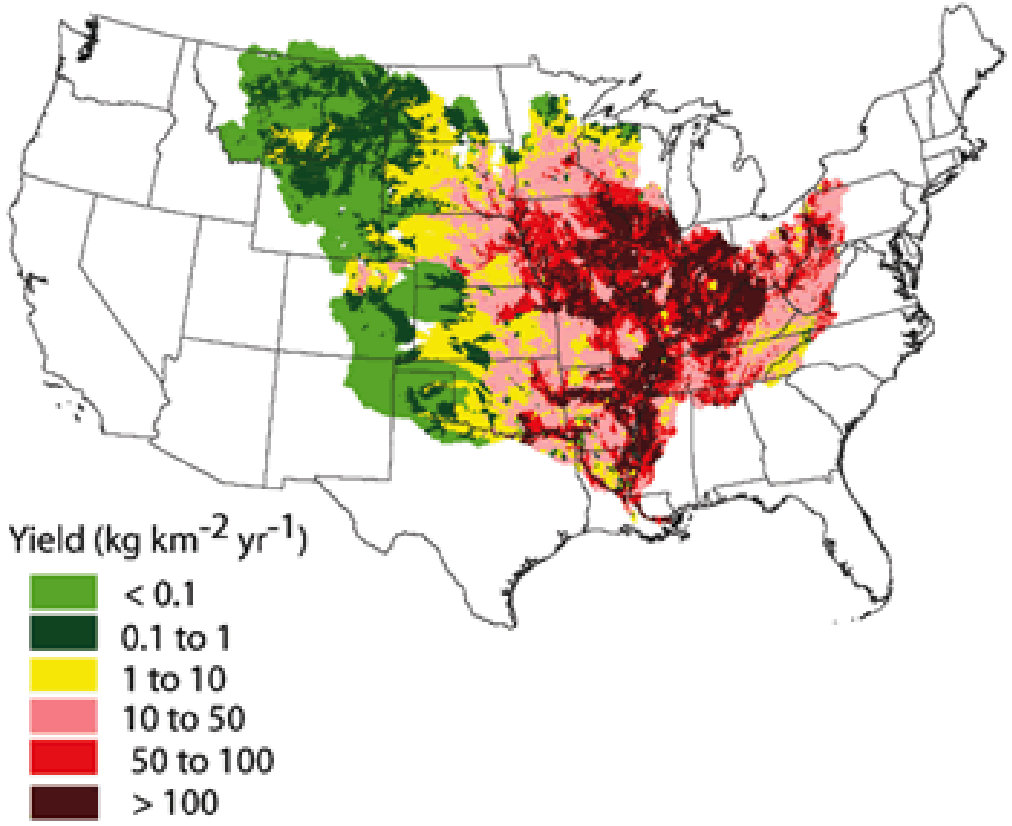
Studies conducted by the U.S. Geological Survey (USGS) using the SPARROW model (Alexander et al. 2008) have clearly shown that only a small percent of the Mississippi River's nutrient flux to the Gulf is derived from Louisiana (only 1.7% for total nitrogen and 2.4% for total phosphorus). As illustrated in Figure 2 showing phosphorus flux into the Gulf (Alexander et al. 2008), Louisiana waters do not significantly impact the hypoxic zone; the map for nitrogen flux into the Gulf is similar. The same USGS study pointed out that only 9% of nitrogen and 12% of phosphorus loadings to the Gulf are derived from urban and population-related sources; the remaining nitrogen loadings (91%) and phosphorus loadings (88%) come from agricultural sources, natural sources, and atmospheric deposition (nitrogen only) none of which have any established discharge limits.

The USGS study highlights the need for corrective actions other than TMDL-derived load allocations aimed only at regulated dischargers in Louisiana to address Gulf hypoxia. Waste-load allocations placed upon dischargers in these three subsegments or elsewhere in Louisiana will have a negligible impact on the Gulf of Mexico hypoxic zone, yet significant impact on Louisiana's permitting program as outlined below.

- Master General Permits would have to be modified.
- 58 facilities may be affected if TMDLs are limited to the three listed subsegments (021102, 070601, 120806).
- 2,103 facilities may be affected if TMDLs are basin-wide for the three basins (Mississippi, Barataria, Terrebonne) bordered by the three listed subsegments.
- 2,190 facilities may be affected if TMDLs account for Atchafalaya Basin input.
- 11,599 facilities may be affected if TMDLs account for state-wide watershed inputs; certainly a potential considering all of Louisiana drains to the Gulf.

Figure 2.

Phosphorus delivered to the Gulf of Mexico (Alexander et al. 2008)



IV.f. Total Maximum Daily Loads for Coastal Subsegments

Recent studies point to additional variables beyond simple nutrient flux that influence the timing and extent of hypoxia in Gulf waters. The causes of hypoxia in Gulf waters, summarized by Bianchi et al. (2010), show many factors other than simple nutrient flux can also impact the timing and extent of hypoxia in the Gulf. Other factors include the strength of the pycnocline limiting oxygenation of deeper waters, seasonal current variability, seasonal variations in wind, small scale daily and hourly variation in factors affecting ventilation of deep waters, organic carbon and suspended sediment loading from the Mississippi and Atchafalaya Rivers, oxygen depletion caused by sediment loads on the bottom, flow rate of the rivers, and marsh loss and restoration efforts (Bianchi et al 2010). While none of these factors negate the significant impact of nutrients from the mid and upper Mississippi River Basin, they do highlight the need for additional studies to determine suitable depth-stratified dissolved oxygen criteria and assessment procedures in all Gulf subsegments of Louisiana. Any action to reduce the hypoxic zone in the Gulf of Mexico must address the upstream sources entering the Mississippi River from outside of Louisiana.

IV.g. Partnership Efforts to Address Gulf Hypoxia

Addressing Gulf hypoxia will, at a minimum, require a multi-state and regional effort. USEPA must proceed in a cohesive, unified manner in addressing the Gulf hypoxia issue and work to gain agreement among states for implementing measurable water quality improvement strategies and provide funding or other incentives to gain participation by unregulated sectors that are significant contributors to Gulf hypoxia. USEPA should therefore support, promote and expand on the process already established by the Mississippi River/Gulf of Mexico Watershed Nutrient (Hypoxia) Task Force ("Hypoxia Task Force"). Multiple federal/tribal (7) and state agencies (12) have invested significant resources participating in the Hypoxia Task Force and developing action plans to reduce and control Gulf hypoxia and improve Mississippi River Basin water quality. The actions outlined in the Hypoxia Action Plan are the answer to reducing the anthropogenic impact on Gulf hypoxia.

V. Coastal Subsegments Affected by Oil Spill and/or Cleanup Activities

On April 20, 2010 British Petroleum's Deepwater Horizon drilling ship operating in the Gulf of Mexico approximately 50 miles off the Mississippi River Delta exploded and sank. Eleven workers were killed in the explosion. This triggered an oil spill from the damaged riser at the bottom of the Gulf that continued until August 4, 2010 when a static kill procedure effectively closed the well. The well was then cemented and permanently closed by August 16, 2010. The resulting oil spill affected a large portion of Louisiana's coastline. LDEQ and other agencies continue to analyze the impact of the spill on Louisiana's coastal waters. Results of this analysis will be presented in future reports by LDEQ as well as by other national and state agencies and academic researchers.

For purposes of the 2012 Integrated Report, LDEQ has estimated that 41 coastal area subsegments were affected by the oil spill and associated cleanup activities. LDEQ assessed these subsegments as being potentially and/or temporarily impaired for fish and wildlife propagation (FWP). The suspected impairments were based on fish, crab, shrimp and shellfish closures issued by the Louisiana Department of Wildlife and Fisheries and LDHH. Closure information was taken from the Environmental Response Management Application (ERMA) Gulf Response Website (NOAA 2010).

Among the 41 subsegments, LDEQ identified 22 subsegments for suspected impairment of the primary contact recreation (PCR) use. One additional subsegment not reported for FWP impairment was also identified for suspected impairment to PCR. Suspected PCR impairments were based on the location of Shoreline Cleanup Assessment Team (SCAT) oiling observations found on the ERMA Website (NOAA 2010).

VI. Suspected Sources of Impairment

In addition to the use of water quality data, LDEQ, Office of Environmental Compliance (OEC), Inspection Division staff familiar with local watershed conditions and activities provided input

regarding significant suspected sources of impairment or the potential that natural sources were causing criteria exceedances. If criteria exceedances are suspected by the Inspection Division staff to be due to natural conditions (not man-altered or man-induced), then the subsegment was placed in category 5RC (possible revision of criteria needed; see Table 1). In such cases, LDEQ will evaluate the need for a Use Attainability Analysis (UAA) or other water quality survey for potential criteria revision.

LDEQ placed subsegments 021102, 070601, and 120806 in category 3 (insufficient data; see Table 1) where there was uncertainty about the suspected cause and no anthropogenic sources identified and/or suspected. Category 3 was also used for subsegments with potential nutrient enrichment concerns. Listings for nitrate/nitrite nitrogen and total phosphorus were historically based on evaluative assessments. However, the evaluative assessments were based on best professional judgment with no regulatory nutrient criteria basis. LDEQ is currently coordinating with USEPA to collect data that will inform the nutrient criteria development process and allow more appropriate assessments in the future.

VII. Integrated Report Category Determination

LDEQ made a preliminary determination of Integrated Report categorization (see Table 1) based on statistical assessment of criteria exceedances and subsequent determination of a water body's designated use support (see Table 2). LDEQ used additional information such as previous TMDL development (category 4a), insufficient data determinations (category 3), environmental events (e.g., hurricanes, oil spill) (category 3 or 4b), remediation activities (category 4b) and also suspected sources to determine appropriate Integrated Report categories. Multiple categories may be assigned to a single subsegment which has multiple criteria for multiple uses.

VIII. Total Maximum Daily Load Prioritization

In accordance with CWA Section 303(d), states are required to prioritize for TMDL development those waters impaired by a pollutant; LDEQ placed such subsegments in category 5. LDEQ prioritized subsegments for TMDL development based on the following:

- USEPA Consent Decree Due Dates in 2012 (Pontchartrain Basin (04)) were given high priority.
- Subsegments with bacteria impairments for oyster propagation were given high priority.
- Subsegments with revised criteria and continued impairments were given high priority.
- Subsegments listed in category 5RC were assigned low priority for TMDL development to allow LDEQ time to evaluate the need for updated criteria.
- Subsegments listed in category 5 based on LDHH beach monitoring data for *Enterococcus* impairments were assigned low priority to allow LDEQ time to coordinate with USEPA on source and epidemiological studies.

SUMMARY

The 2012 Integrated Report Section 303(d) list represents a compilation of primarily five different sources of information: the 2010 Integrated Report; new data assessments for all 12 Louisiana basins with monitoring data (internal and external) between October 2007 and September 2011; all recent TMDL activities occurring during or after development of the 2010 Section 303(d) list; all water bodies under new or existing fish consumption or swimming advisories; and sources such as USGS and NOAA. It is important to note that removal of a water body from the Section 303(d) list, for any reason, does not remove water quality protections from that water body. All water bodies in Louisiana, listed or not listed, are subject to the same protections under the federal and state laws and regulations, in particular the CWA and Louisiana's surface water quality standards (LAC 33:IX.Chapter 11). LDEQ will continue to monitor and assess the quality of Louisiana's waters; permitted facilities are subject to conditions of their permits; unpermitted point source dischargers are required to obtain a permit or face enforcement actions; violators of permit conditions are subject to enforcement action; and contributors to nonpoint sources of pollution are encouraged to follow best management practices as developed by LDEQ's Nonpoint Source Program and its many collaborators.

REFERENCES

Alexander, R.B., et al. 2008. *Differences in Phosphorus and Nitrogen Delivery to the Gulf of Mexico from the Mississippi Basin*. 42:3 Environmental Science Technology 822-30. Available at: http://water.usgs.gov/nawqa/sparrow/gulf_findings/.

Bianchi T.S., et al. 2010. T*he Science of Hypoxia in the Northern Gulf of Mexico: A Review*. Sci. Total Environ. doi:10.1016/j.scitotenv.2009.11.047. Reference available upon request.

Louisiana Administrative Code, Title 33, Part IX, Chapter 11 (LAC 33:IX.1101-1123). *Louisiana's Surface Water Quality Standards.* 2011. Available at: http://www.deq.louisiana.gov/portal/DIVISIONS/LegalAffairs/RulesandRegulations/Title33.aspx#ERC

Louisiana Department of Environmental Quality. 2004. *Standard Operating Procedure for Water Sample Collection, Preservation, Documentation and Shipping (revision 4)*. Office of Environmental Compliance, Surveillance Division. Baton Rouge, Louisiana. Reference available upon request.

Louisiana Department of Environmental Quality. 2007. *Quality Assurance Project Plan (QAPP) for the Ambient Water Quality Monitoring Network (revision 3)*. Office of Environmental Assessment, Water Quality Assessment Division and Laboratory Services Division, and Office of Environmental Compliance, Surveillance Division. Baton Rouge, Louisiana. Reference available upon request.

Louisiana Department of Environmental Quality. 2008a. *Standard Operating Procedure for Water Sample Collection, Preservation, Documentation and Shipping; Sonde Deployment and Continuous Monitoring (revision 5)*. Office of Environmental Compliance, Surveillance Division. Baton Rouge, Louisiana. Reference available upon request.

Louisiana Department of Environmental Quality. 2008b. *Memorandum of Agreement: Development of Dissolved Oxygen (DO) Criteria and Assessment Protocols to Support Fish and Wildlife Propagation in Louisiana Waters Based on Ecological Regions (Ecoregions) and Water Body Types*. Office of Environmental Assessment, Water Quality Assessment Division. Baton Rouge, Louisiana. Reference available upon request.

Louisiana Department of Environmental Quality. 2010a. *Standard Operating Procedure for Water Sample Collection, Preservation, Documentation and Shipping; Sonde Deployment and Continuous Monitoring (revision 6)*. Office of Environmental Compliance, Surveillance Division. Baton Rouge, Louisiana. Reference available upon request.

Louisiana Department of Environmental Quality. 2010b. *Quality Assurance Project Plan (QAPP) for the Ambient Water Quality Monitoring Network (revision 4)*. Office of Environmental Assessment, Water Quality Assessment Division and Laboratory Services Division, and Office of Environmental Compliance, Surveillance Division. Baton Rouge, Louisiana. Reference available upon request.

Louisiana Department of Environmental Quality. 2011a. *Standard Operating Procedure for Water Quality Assessments and Production of Water Quality Integrated Report (revision 3).* Office of Environmental Services, Water Permits Division. Baton Rouge, Louisiana. Reference available upon request.

Louisiana Department of Environmental Quality. 2011b. *Quality Assurance Project Plan (QAPP) for the Ambient Water Quality Monitoring Network (revision 5)*. Office of Environmental Services, Water Permits Division and Office of Environmental Compliance, Inspection Division. Baton Rouge, Louisiana. Available at:
http://www.deq.louisiana.gov/portal/Portals/0/planning/QAPP_1004_r05%202011%20FINAL%208-29-2011.pdf.

Louisiana Department of Environmental Quality. 2011c. *Standard Operating Procedure for Data Evaluation, Assessment and Reporting (revision 1)*. Office of Environmental Services, Water Permits Division. Baton Rouge, Louisiana. Reference available upon request.

National Oceanic and Atmospheric Administration. 2010. Environmental Response Management Application Gulf Response. Available at: http://gomex.erma.noaa.gov/erma.html

National Oceanic and Atmospheric Administration. 2011. *Fisheries of the United States – 2010.* commercial fisheries available at:
http://www.st.nmfs.noaa.gov/st1/fus/fus10/02_commercial2010.pdf;
recreational fisheries available at:
http://www.st.nmfs.noaa.gov/st1/fus/fus10/03_recreational2010.pdf.

United States Code. Title 33. Section 1251 et seq., 1972. *Federal Water Pollution Control Act (also known as the Clean Water Act).* Available at:
http://cfpub.epa.gov/npdes/cwa.cfm?program_id=45

United States Environmental Protection Agency. 2003. *Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and Its Tidal Tributaries," Chapter 3.* Available at:
http://www.chesapeakebay.net/publication.aspx?publicationid=13142.

United States Environmental Protection Agency. Various dates. *Integrated Report Guidance* and *303(d) Listing Guidance.* Available at:
http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/guidance.cfm#listing